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could

scans the input stream for an object. Upon finding an object, the method determines whether the object references a system service and dynamically loads the referenced service. The service is dynamically configured and the object is instantiated in a class factory. --

REMARKS

The number of inventors has been reduced to better reflect the inventorship of the present application.

The Title, Summary and Abstract have been changed.


Claims 2 – 20 have been deleted.

New claims 21 – 34 have been added.

The filing fee has been calculated according to the above amendments.

Should the Examiner have any questions or comments regarding the amendments, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,



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This paper and fee are being deposited with the U.S. Postal Service Express Mail Post Office to Addressee service under 37 CFR §1.10 on the date indicated above and is addressed to the Commissioner for Patents, Washington, D.C. 20231
<u>Kathy Mettee</u> Name of person mailing paper and fee
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RE-WRITTEN SPECIFICATION MARKED UP TO SHOW ALL CHANGES  
PURSUANT TO 37 C.F.R. 1.121(b)

In the Title:

XML-BASED INTEGRATED SERVICES [FRAMEWORK] PARSING

26530.57

# XML-BASED INTEGRATED SERVICES PARSING

ISA

## Cross-Reference

This application is a Continuation of U. S. Serial Number 09/833,001,  
5 filed on April 11, 2001, which is a Continuation of U. S. Serial Number  
09/741,678, filed December 19, 2000.

## Background

This invention relates generally to computer software and, more  
10 specifically, to a system and method for providing distributed, directory-  
enabled applications using an eXtensible Markup Language ("XML")  
application program interface ("API") framework.

Personal computers or workstations may be linked in a computer  
network to facilitate the sharing of data, applications, files, and other  
15 resources. One common type of computer network is a client/server network,  
where some computers act as servers and others as clients. In a client/server  
network, the sharing of resources is accomplished through the use of one or  
more servers. Each server includes a processing unit that is dedicated to  
managing centralized resources and to sharing these resources with other  
20 servers and/or various personal computers and workstations, which are  
known as the "clients" of the server.

Different software applications are available through the server to the  
clients as network resources. The clients may also utilize "standalone"  
applications, which may be installed only on a client and not available  
25 through the network. The applications may perform a variety of tasks, such  
as word processing, email, web browsing, and many more. The applications  
may be written in a variety of programming languages as long as the

applications are compiled to function on the underlying operating systems used by the server and the clients.

Each application is constructed using a native API that provides a set of routines, protocols, and tools. This set provides the building blocks that allow programmers to enable the applications which use the API to communicate with the operating system and other programs. Large applications such as operating systems may have hundreds of API calls to provide other applications the interfaces needed for effective communication and access to the operating system's services. Smaller applications may have a very limited set of API calls.

Because APIs are constructed for a specific application in a given programming language and targeted at a particular platform or operating system, they generally cannot be used as an interface for another application without making nontrivial modifications. In addition, such highly specific APIs make it difficult for applications to communicate if, for example, the applications were written using different programming languages or for use on different operating systems.

It is desired to provide an XML integrated services ("XIS") framework utilizing a flexible, cross-protocol, cross-language API for distributed directory-enabled applications by providing both a high level of interactivity and modular dynamic components with a common object model for both clients and servers.

### Summary

<sup>25</sup> ~~In response to these and other problems, an improved system, method and software program is provided for distributed directory-enabled applications using an XML API. The improvement provides an event system, a parser, and a bridge-based object model.~~

<sup>30</sup> ~~The event system includes the ability to publish an event, subscribe to the event, and act on the event. The parser enables the XML API to parse~~

a ~~object is instantiated in a class factory.~~

### **Brief Description of the Figures**

Fig. 1 illustrates the interaction of three applications through their respective APIs.

5 Fig. 2 is a simple system illustrating a possible implementation of an XIS API framework.

Fig. 3 is a diagram illustrating one embodiment of an XIS API providing interaction between various applications.

Fig. 4 is an exemplary illustration of an XIS architectural framework.

10 Fig. 5 is a flowchart of a possible parsing sequence for one embodiment of the present invention.

Fig. 6 is a flowchart of an event sequence in an exemplary event system.

Fig. 7 is a flowchart illustrating a method by which a tag manager may resolve tag duality issues in one embodiment.

15 Fig. 8 is a flowchart illustrating an exemplary process for implementing thread safeness through a bridge.

Fig. 9 is a block diagram demonstrating a service performing a cross-protocol transformation.

Fig. 10 is one embodiment of a memory management scheme.

20 Fig. 11 is a flowchart demonstrating a basic style sheet selection sequence.

## XML-BASED INTEGRATED SERVICES FRAMEWORK

### Abstract

Sub A4 7  
5 An improved system, method and software program is provided for distributed directory-enabled applications using an XML API. The improvement provides an event system, a parser, and a bridge-based object model.

10 The event system includes the ability to publish an event, subscribe to the event, and act on the event. The parser enables the XML API to parse XML files by accepting an XML file as an input stream, parsing the input stream, dynamically loading system services referenced in the input stream, and configuring the services. The bridge-based object model utilizes thread safeness, which enables a bridge to use semaphore access control to control thread access, smart pointers, which enable a bridge to automatically manage the memory it requires, and opaque interfaces, which allow a bridge  
15 to maintain interface compatibility when implementation changes occur in an interface.